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U.S. Policy on Acid Rain

Public Information Series

United States Department of State
Bureau of Public Affairs
Washington, D.C.

June 1986

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Following is an address by Richard E. Benedick, Deputy Assistant Secretary for Environment, Health, and Natural Resources, before the International Conference on Acidification and Its Policy Implications, Amsterdam, The Netherlands, May 8, 1986.

Acid rain has proven in the United States to be a divisive domestic political issue, a serious concern with our northern neighbor, Canada, and a complex ecological problem with considerable scientific uncertainty. All of these factors have contributed to the evolution of U.S. policy on acid rain.

Past Actions and Progress

The United States enacted major legislation to protect air quality over 15 years ago. The Clean Air Act of 1970, together with major amendments added in 1977, resulted in an air pollution control effort that has served as a model for many other industrialized nations. They have also led to significant, measurable improvements in air quality in the United States.

Probably the single most important feature of the Clean Air Act is the establishment of national ambient air quality standards (NAAQS) for air pollutants. These standards require that ambient concentrations of those pollutants be limited to levels that safeguard public health and welfare. NAAQS for sulfur dioxide (SO_2), nitrogen oxides (NO_X), and volatile organic compounds (VOCs)—all of which contribute to acid rain—have been in effect for over 10 years.

Within the United States, it is the individual States which are responsible for ensuring that the NAAQS are met within their own borders. In order to attain the Federal standards locally, the States set emissions limits on existing facilities.

The Clean Air Act also sets emissions limits for various classes of new stationary sources. The theory behind this was that emissions from new sources could be controlled at much lower cost than emissions from existing sources and that the requirement to control new sources would encourage the development of more efficient and cost-effective control technologies. Furthermore, the control of new sources could lead to cleaner air as old facilities were eventually replaced. To date, the United States has set new source performance standards to control emissions of SO_2 and/or NO_X from all new oil- and coal-fired powerplants, large industrial boilers, smelters, nitric acid plants, sulfuric acid plants, stationary gas turbines, and petroleum refineries. Standards for VOCs have also been set for several new source categories.

Besides controlling several kinds of stationary sources, the Clean Air Act also limits air emissions from new mobile sources. Standards to limit NO_X and VOCs from new cars and light-duty trucks were first implemented in 1973, and they have been tightened since then.

These Federal and State actions have undoubtedly helped to improve air quality in the United States—a remarkable accomplishment considering the strong growth of U.S. industrial production in recent years. At this time, about 98% of counties in the United States are in compliance with the national standards for SO_2 and NO_X. Sulfur dioxide emissions fell from a peak of 28 million metric tons in 1972 to about 21 million metric tons in 1984, despite a 35% growth in coal use. Volatile organic compounds followed a similar path, while a precipitous rise in NO_X emissions was halted and turned to a level trend.

Despite this progress, there is some cause for concern. Approximately 4% of lakes recently surveyed in the northeastern United States were found to be acidic. There is evidence of reduced crop growth from ambient ozone levels. Although unexplained visible damage to high altitude spruce fir trees amounts to a fraction of 1% of the eastern U.S. forest area, we are, nevertheless, concerned about possible future trends. Growth rate changes have been recorded for several other tree species, which may be linked to atmospheric pollution. It is also believed that buildings and materials in some areas are experiencing accelerated deterioration.

Future Uncertainties and Policy Considerations

Looking to the future, NO_X emissions are projected to increase slightly by 1995, despite the continuing turnover of

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the national vehicle fleet and the progressively more stringent controls placed on automobile and truck emissions. Sulfur dioxide emissions are much more difficult to project, because economic growth, existing regulatory programs, changing fuel use patterns, and the extended life of U.S. powerplants all will affect emissions in different and uncertain ways. We are currently unsure whether they will increase or decrease over the next decade.

Against this background, evolving U.S. acid rain policy must address three primary questions.

First, to what extent must emissions of acid rain precursors be reduced in order to adequately protect the resources at risk in North America?

Second, where should emissions reductions take place?

And third, when should those reductions be made?

Over the longer term, existing regulatory programs should reduce emissions. But will this reduction be adequate, and will our lakes and forests be threatened in the meantime? Do we need to embark on a major program of retrofit controls on existing sources? If so, in what parts of the country should sources be retrofitted?

In the United States, acid rain has been as politically divisive as any environmental issue the country has faced. Various proposed solutions have opposed one region against another; they have threatened the livelihood of high-sulfur coal miners and have raised the possibility of significant increases in electric rates in precisely those industrial areas hardest hit by economic dislocations.

The acid rain issue has been especially difficult to resolve because proposed solutions must choose from a limited array of options. Most SO_2 emissions in the United States are from electric utility and industrial boilers. At this time, only three emissions control techniques are proven and available for reducing SO_2 emissions from coal-fired boilers: coal washing, coal switching, and flue gas scrubbing. However, coal washing cannot be used to achieve substantial SO_2 reductions, and the other two methods impose high socioeconomic costs on particular regions—for example, unemployment or higher electricity rates. The availability of a broader range of efficient and cost-effective control technologies could help to reduce these political and economic difficulties.

A further complication is the unavailability of a solid basis to determine the extent and magnitude of current or potential future acid rain damage. No one can say with confidence what level of environmental benefits would result from any specific control program. We are limited in our ability to predict how much acid deposition would be reduced in any particular geographic area by any given control program. Although the costs of control, and the people who would pay those costs, are rather well understood, the extent of environmental improvement that would result remains highly uncertain. In such a situation, political consensus is difficult to achieve.

Recent Developments

In 1983, the U.S. Government carried out a thorough review of the state of acid rain knowledge and the options available for its management. Following that review, it was concluded that, although acid rain was clearly a serious concern, there was insufficient information to embark upon a new emissions control program. This was not a decision either for or against further controls but, rather, to defer such a decision until a more adequate scientific and technical base was established.

In the meantime, it should be recognized that the United States has taken notable steps in recent years to address the acid rain problem.

First, it is using existing legal authority to expand control over emissions of acid rain precursors.

Second, an ambitious research program is addressing the scientific uncertainties.

Third, the development and demonstration of innovative control technology is being strongly promoted.

And fourth, a new chapter in cooperation with our Canadian neighbors has been opened.

New Regulations. The United States recently implemented new regulations to control future emissions of SO_2, NO_X, and VOCs. In March 1985, new standards were established for controlling emissions of particulates and NO_X from light-duty and heavy-duty trucks, as well as from urban buses. After becoming effective with the 1988 model year, these standards are expected to reduce NO_X emissions by about 2 million metric tons per year.

Regulations were also recently passed limiting the amount of pollution control credit that can be claimed by a plant that builds a tall smokestack. Tall stacks help such plants achieve ambient air quality standards locally by dispersing emissions over broader areas, but they do not reduce the total amount of SO_2 emitted. By eliminating this incentive to build tall smokestacks, the U.S. Government aims to encourage pollution controls that will actually limit total emissions.

Other regulations are being developed that should further reduce future SO_2 and NO_X emissions, including standards to control emissions from new industrial boilers, which should be in effect by the end of the decade.

Expanded Research. In addition to regulatory actions, the U.S. Government has funded a 10-year research program targeted specifically at causes and effects of acid rain—the National Acid Precipitation Assessment Program. Since 1982, steadily rising annual budgets have totaled $225 million, plus an additional $85 million in the coming fiscal year. Research funds are divided among projects studying atmospheric processes, terrestrial effects, deposition monitoring, and aquatic effects.

Among other things, the 1985 program funded projects that:

- Increased the quality of manmade emissions inventories;
- Accelerated the development of atmospheric models;
- Fully implemented the nationwide wet deposition monitoring network;
- Commenced dry deposition monitoring;
- Completed the first phase of a National Surface Water Survey;
- Conducted soil surveys of representative watersheds;
- Developed methodologies for a national survey of forest effects; and
- Analyzed control technologies.

Innovative Technology. The movement of acidic substances and oxidants across the U.S.-Canadian border is receiving particular attention by both governments. In March 1985, President Reagan and Canadian Prime Minister Mulroney appointed two distinguished special envoys, Drew Lewis of the United States and Bill Davis of Canada, to study the transboundary acid rain issue and report back with recommendations on ways to resolve it.

The special envoys presented their report in January 1986. A major element of their recommendations for the United States is a 5-year, $5 billion control technology commercial demonstration program, cofunded by the Federal Government and private industry. By demonstrating in exisiting plants the commercial feasibility of innovative control technologies that promise lower

costs and/or greater efficiencies, this program could expand the list of control options available to U.S. industry, facilitate a domestic consensus on acid rain, and achieve some near-term reductions in transboundary flows.

The U.S. Government has stated that it will seek to provide the future funding recommended by the special envoys. In this connection, I would note that the United States has already expended $2.2 billion in research funds between fiscal years 1981 and 1985 to develop technologies for cleaner use of coal. In this year's budget, $700 million is earmarked for clean coal research up to 1991. In addition, an $800 million joint industry/government program to demonstrate new clean ways to use coal is being implemented.

Cooperation With Canada. The envoys also recommended that the two governments put in place mechanisms to encourage cooperation on this issue. Exisiting legislation in both countries will be reviewed to identify opportunities to control transboundary air pollution; acid rain will remain high on the agenda of meetings between the President and the Prime Minister; and the two governments will establish a bilateral advisory and consultative group on transboundary air pollution.

The special envoys also recommended enhanced cooperative research efforts to study dry deposition monitoring; rates of aquatic change; impacts on aquatic biology, forests, and materials; and potential damage from heavy metals.

Conclusion

Let me conclude by observing that the President of the United States this year fully endorsed the report of the special envoys, and planning is now underway to implement all of its recommendations. As the report stressed, in order for progress on acid rain to be possible, the recommendations must be realistic: "they must not ask either country to make a sudden, revolutionary change in its position" or "call for immediate abandonment of major policy stands."

I should emphasize here that it is not U.S. policy to wait for definitive answers on all acid rain uncertainties before acting. Decisions on acid rain, like other environmental decisions, will always have to occur in the face of some scientific uncertainty. The United States will act when it is reasonably certain that such action will achieve its intended results and that those results will justify the social and economic costs involved.

Thus, while the United States has deferred new mandatory controls for acid rain, we are moving ahead vigorously with the programs outlined above. The U.S. Government is fully committed to finding appropriate solutions to the problem of acid rain as expeditiously as possible. ■

Published by the United States Department of State • Bureau of Public Affairs
Office of Public Communication • Editorial Division • Washington, D.C. • June 1986
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